Glossary

A

acre-foot (af) – The volume of water necessary to cover one acre to a depth of one foot; equal to 43,560 cubic feet or 325,851 gallons.

adjudication –The act of judging or deciding by law. In the context of an adjudicated groundwater basin, landowners or other parties have turned to the courts to settle disputes over how much groundwater can be extracted by each party to the decision.

agricultural discharge standards – State and federal regulations regarding water returned to streams, rivers, groundwater aquifers, or evaporation ponds by agricultural users. *Context: Scenario Factor.*

agricultural lands stewardship – Conserving natural resources and protecting the environment by compensating owners of private farms and ranches for implementing stewardship practices. *Context: Resource Management Strategy.*

agriculture water reliability (average) – A measure of a water system's ability to sustain the social, environmental, and economic systems that it serves during a year of average precipitation

agricultural water use efficiency – The ratio of applied water to the water required to sustain agricultural productivity. Efficiency can be increased through the application of less water to achieve the same beneficial productivity or by achieving more productivity with the same use. *Context: Scenario Factor, Resource Management Strategy*..

allocation of long-term contractual imports – Interregional allocation of water through mechanisms such as the State and federal water projects. *Context: Scenario Factor.*

alluvial – Of or pertaining to or composed of alluvium.

alluvium – A general term for clay, silt, sand, gravel, or similar unconsolidated detrital material, deposited during comparatively recent geologic time by a stream or other body of running water, as a sorted or semi-sorted sediment in the bed of the stream or on its floodplain or delta, as a cone or fan at the base of a mountain slope.

anthropogenic – Of human origin or resulting from human activity.

applied water – The amount of water from any source needed to meet the demand of the user. See "unit applied water."

applied water reductions – A decrease in the amount of water diverted for beneficial uses; can include both real water and reused water. *Context: Benefit of water use efficiency and RDI*

appropriative right – The right to use water that is diverted or extracted by a nonriparian or nonoverlying party for nonriparian or nonoverlying uses. In California, surface water appropriative rights are subject to a statutory permitting process while groundwater appropriation is not.

aquifer – A body of rock or sediment that is sufficiently porous and permeable to store, transmit, and yield significant or economic quantities of groundwater to wells and springs.

aquifer remediation – See groundwater remediation/aquifer remediation

aquitard – A confining bed and/or formation composed of rock or sediment that retards but does not prevent the flow of water to or from an adjacent aquifer. It does not readily yield water to wells or springs, but stores groundwater.

aridity – A term describing a climate or region in which precipitation is so deficient in quantity or occurs so infrequently that intensive agricultural production is not possible without irrigation.

artesian aquifer – A body of rock or sediment containing groundwater that is under greater than hydrostatic pressure; that is, a confined aquifer. When an artesian aquifer is penetrated by a well, the water level will rise above the top of the aquifer.

artesian pressure – Hydrostatic pressure of artesian water, often expressed in terms of pounds per square inch; or the height, in feet above the land surface, of a column of water that would be supported by the pressure.

artificial recharge – The addition of water to a groundwater reservoir by human activity, such as putting surface water into dug or constructed spreading basins or injecting water through wells.

available groundwater storage capacity – The volume of a groundwater basin that is unsaturated and capable of storing groundwater.

available soil water – The amount of water held in the soil that can be extracted by a crop; often expressed in inches per foot of soil depth. It is the amount of water released between in situ field capacity and the permanent wilting point.

average annual cost of implementing option – Annualized total monetary cost of option required for "turn key" implementation including environmental and third party impact mitigation, storage, conveyance, energy, capitalized O&M, administrative, planning, legal and engineering costs. *Context: Evaluation Criteria; Planning Concept/Consideration.*

average annual runoff – The average value of total annual runoff volume calculated for a selected period of record, at a specified location, such as a dam or stream gage.

average year water demand – Demand for water under average hydrologic conditions for a specific level of development.

B

basin irrigation – Irrigation by flooding areas of level land surrounded by dikes. Used interchangeably with level border irrigation, but usually refers to smaller areas.

basin management objectives (BMOs) – See management objectives

beneficial use – One of many ways that water can be used either directly by people or for their overall benefit. There are 24 categories of beneficial uses identified by the State Water Resources Control Board.

border irrigation – Irrigation by flooding strips of land, rectangular in shape and cross leveled, bordered by dikes. Water is applied at a rate sufficient to move it down the strip in a uniform sheet. Border strips having no downfield slope are referred to as level border systems. Border systems constructed on terraced lands are commonly referred to as benched borders.

C

catastrophic vulnerability – The probability and magnitude of potential economic, public health, and environmental losses associated with water management actions. *Context: Scenario Factor.*

Central Valley Project deliveries – The volume of water imported to a given study area from the Central Valley Project. *Context: Scenario Factor.*

check irrigation – Modification of a border strip with small earth ridges or checks constructed at intervals to retain water as the water flows down the strip.

CIMIS – California Irrigation Management Information System A network of automated weather stations that are owned and operated cooperatively between the DWR and local agencies. The stations are installed in most of the agricultural and urban areas in the State and provide farm and large landscape irrigation managers and researchers with "real-time" weather data to estimate crop and landscape ET

rates and make irrigation management decisions.

climate change – The impacts associated with changes in average annual temperature and precipitation and their monthly patterns in 2050 compared to today. *Context: Scenario Factor.*

Colorado River supply – The volume of water imported to California from the Colorado River. *Context: Scenario Factor.*

commercial activity mix – The mix of high- and low-water using commercial activity. Note that commercial activity is broken into two factors: total commercial activity and commercial activity mix. The latter factor allows designation of the type of commercial activity that is occurring. See also total commercial activity. *Context: Scenario Factor.*

community water system – A public water system that serves at least 15 service connections used by yearlong residents or regularly serves at least 25 yearlong residents. See also public water system.

consumed fraction – the portion of agricultural applied irrigation water that satisfies evapotranspiration.

conveyance – Provides for the movement of water and includes the use of natural and constructed facilities including open channels, pipelines, diversions, fish screens distribution systems and pumplifts.

conveyance facilities – Canals, pipelines, pumplifts, ditches, etc. used to move water from one area to another. *Context: Study Plan Building Block, Resource Management Strategy.*

confined aquifer – An aquifer that is bounded above and below by formations of distinctly lower permeability than that of the aquifer itself. An aquifer containing confined groundwater. See also artesian aquifer.

conjunctive management and groundwater storage – Coordinated operation of surface water storage and use, groundwater storage and use, and conveyance facilities. *Context: Resource Management Strategy.*

conjunctive use – The coordinated and planned management of both surface and groundwater resources in order to maximize the efficient use of the resource; that is, the planned and managed operation of a groundwater basin and a surface water storage system combined through a coordinated conveyance infrastructure. Water is stored in the groundwater basin for later and planned use by intentionally recharging the basin during years of above-average surface water supply.

conservation tillage – a tillage practice that leaves plant residues on the soil surface for erosion control and moisture conservation

consumptive use – The quantity of water that is not available for immediate reuse because it has been evaporated, transpired, or incorporated into products, plant tissue, or animal tissue. Water removed from available supplies without return to a water resource system (uses such as manufacturing, agriculture, and food preparation.)

contaminant – Any substance or property preventing the use or reducing the usability of the water for ordinary purposes such as drinking, preparing food, bathing washing, recreation, and cooling. Any solute or cause of change in physical properties that renders water unfit for a given use. (Generally considered synonymous with pollutant.)

cost recovery – Designates who (marginal or existing users) pays the marginal and existing water costs. Also specifies circumstances where other revenue sources are used to recover costs. Costs can include capital, O&M, financing, environmental compliance (documentation, permitting and mitigation), etc. *Context: Scenario Factor*

cost of reliability enhancement – The total cost required to add an increment of reliability. *Context: Evaluation Criteria.*

cost of unreliability – The sum of the forgone long-term value and short-term costs and losses incurred to the users. *Context: Evaluation Criteria*

critical conditions of overdraft – A groundwater basin in which continuation of present practices would probably result in significant adverse overdraft-related environmental, social, or economic impacts. The definition was created after an extensive public input process during the development of the Bulletin 118-80 report.

cover crop – Close growing crop, that provides soil protection, seeding protection, and soil improvement between periods of normal crop production, or between trees in orchards and vines in vineyards. When plowed under and incorporated into the soil, cover crops may be referred to as green manure crops.

crop coefficient – A numerical factor (normally identified as Kp or Kc) that relates the evapotranspiration (ET) of the individual crop (ETc) to reference evaporation or some other index.

crop idling – The temporary or permanent fallowing of land previously under irrigation that results in a reduction in stresses to a water system (e.g., alternate land use must result in a reduction in water use and/or enhancement of water quality, etc.). *Context: Scenario Factor.*

crop rotation – A system of farming in which a succession of different crops are planted on the same land area, as opposed to growing the same crop time after time (monoculture).

crop unit water use –The volume of irrigation water used per unit area of land, commonly expressed in acre feet per acre. As used in scenario evaluation, a change in unit water use can be a function of evapotranspiration rates and cultural practices, but NOT use efficiency. Agricultural use efficiency is captured under its own distinct factor. *Context: Scenario Factor.*

D

deep percolation – Percolation of water through the ground and beyond the lower limit of the root zone of plants into groundwater.

depletion – Water consumed through evapotranspiration, flows to salt sinks or is otherwise no longer available as a source supply.

desalination – Water treatment process for the removal of salt from water for beneficial use. Source water can be brackish (low salinity) or seawater. *Context: Study Plan Building Block.*

dewvaporation (Atmospheric Pressure Desalination) – Desalination through humidification and subsequent dehumidification (collection of evaporated water). *Context: Resource Management strategy.*

distribution system – System of ditches or conduits and their controls that conveys water from the supply canal to the farm points of delivery

domestic well – A water well used to supply water for the domestic needs of an individual residence or systems of four or fewer service connections.

drinking water standards – State and federal regulations regarding water delivered by water purveyors that is used as a potable supply. *Context: Scenario Factor.*

drinking water system See public water system

drinking water treatment and distribution – *Treatment* is the physical, biological and chemical processes that make water suitable for potable use. *Distribution* includes storage, pumping, and pipe systems to protect and deliver the treated water to customers. *Context: Study Plan Building Block.*

drip irrigation – A method of microirrigation wherein water is applied to the soil surface as drops or small streams through emitters. Discharge rates are generally less than 8 L/h (2 gal/h) for a single-

outlet emitters and 12 L/h (3 gal/h) per meter for line-source emitters.

drought – The magnitude and probability of economic, social or environmental consequences that would occur as a result of a sustained drought under a given study plan. Measures the "drought tolerance" of study plans. *Context: Evaluation Criteria.*

drought condition – Hydrologic conditions during a defined period, greater than one dry year, when precipitation and runoff are much less than average.

drought year supply – The average annual supply of a water development system during a defined drought period.

duty of water – The total volume of irrigation water required to mature a particular type of crop. It includes consumptive use, evaporation, and seepage as well as the water returned to streams by percolation and surface water.

E

earthquake – The degree to which (and probability) consequences would occur as a result of earthquake-induced infrastructure damage under a given study plan. *Context: Evaluation Criteria*.

economic incentives – Financial assistance and pricing policies intended to influence water management including, for example, amount of use, time of use wastewater volume, and source of supply. *Context: Resource Management Strategy.*

ecosystem restoration – The activity of improving the condition of natural landscapes and biotic communities. *Context: Study Plan Building Block.*

effective precipitation – That portion of precipitation that supplies crop evapotranspiration. It includes precipitation stored in the soil before and during the growing season

effective porosity – The volume of voids or open spaces in alluvium and rocks that is interconnected and can transmit fluids.

effective rooting depth – The depth from which soil moisture is extracted; it is determined by the crop rooting characteristics and soil depth limitations.

electrical conductivity (EC) – The measure of the ability of water to conduct an electrical current, the magnitude of which depends on the dissolved mineral content of the water.

energy consumption – The energy consumption required to facilitate water management-related actions such as desalting, pump-storage, groundwater extraction, conveyance or treatment. This criterion pertains to the economic feasibility of a proposed action in terms of O&M costs. *Context: Evaluation Criteria.*

energy costs – Refers to the cost of energy use related to producing, conveying and applying water. It also refers to the cost of energy use for processes and inputs not directly related to water, but which can affect the demand for water (e.g., the cost of nitrogen fertilizer, tractor manufacturing, etc.). *Context: Scenario Factor.*

energy production – Both instantaneous capacity (megawatt) and energy produced (kilowatt hours). *Context: Evaluation Criteria.*

evaporative demand – The collective influence of all climatic factors on the rate of evaporation of water.

environmental justice – The extent and likelihood of disproportionate costs and benefits to people of particular races, cultures, and/or incomes as a consequence of a given study plan. *Context: Evaluation Criteria.*

evaluation criteria – The technical information that will be used to compare the favorability of different

response packages of resource management strategies against future scenarios in Water Plan Update 2010. They are designed to identify and measure potential effects on water supply, the environment, energy use or production , recreational opportunities, groundwater overdraft, and many more.

environmental water (flow based) – The amount of water dedicated to instream uses and aquatic habitat. *Context: Scenario Factor.*

environmental water (land based) – The amount of water used for managed wetlands and native vegetation. *Context: Scenario Factor.*

environmental water quality – The degree to which a study plan is expected to affect water quality in terms of ecosystem health, recreation, salinity intrusion, usability per sector, treatment costs, etc. Aquatic species and water bodies are vulnerable to changes to water quality.

ETo (Reference Evapotranspiration) – The evapotranspiration rate from an extended surface of 3 to 6 inch (8–15 cm) tall green grass cover of uniform height, actively growing, completely shading the ground, and not short on water (the reference ET reported by CIMIS).

evaluation criteria – *Context: Planning Concept/Consideration.*

evaporation – The physical process by which a liquid or solid is transformed to a gaseous state.

evapotranspiration (ET) – The quantity of water transpired by plants, retained in plant tissues, and evaporated from plant tissues and surrounding soil surfaces

evapotranspiration of applied water (ETAW) – The portion of ET satisfied by applied irrigation water.

F

flood irrigation – Method of irrigation where water is applied to the soil surface without flow controls, such as furrows, borders, or corrugations

flood management – The degree to which a study plan might affect flood management operations and/or facilities. *Context: Evaluation Criteria.*

floodplain management – Actions designed to reduce risks to life, property, and the environment due to flooding. Actions can include watershed management, infrastructure construction and operation, variations in land use practices, floodway designations, etc. *Context: Study Plan Building Block.*

flood – The magnitude a probability of consequences that would occur as a result of flood-induced infrastructure damage under a given study plan. *Context: Evaluation Criteria.*

flow diagram – Diagram that characterizes a region's hydrologic cycle by documenting sources of water such as precipitation and inflows and tracks the water as it flows (through many different uses) to its ultimate destinations.

flow diagram table – An itemized listing of all the categories contained in the Flow Diagram including more detailed information, organized by “inputs” and “withdrawals.”

full cost – (1) all monetary costs associated with project planning, implementation, financing, or impact mitigation plus any recurring costs required to sustain benefits; PLUS (2) all nonmonetary costs that are incurred either at implementation or on a recurring basis such as unmitigable environmental or cultural impacts, public trust, environmental justice, or other nonmarket-based societal values. (Coincides with CEQA/NEPA study and other permitting requirements.) *Context: Planning Concept/Consideration.*

furrow irrigation – Method of surface irrigation where the water is supplied to small ditches or furrows for guiding across the field.

G

groundwater – Water that occurs beneath the land surface and fills the pore spaces of the alluvium, soil, or rock formation in which it is situated. It excludes soil moisture, which refers to water held by capillary action in the upper unsaturated zones of soil or rock. ALSO, the economic or environmental consequences resulting from unmet groundwater management objectives such as water levels, storage capacity, water quality, subsidence or sustainability. Examples of such consequences could be increased pumping requirements. *Context: Evaluation Criteria.*

groundwater basin – An alluvial aquifer or a stacked series of alluvial aquifers with reasonably well-defined boundaries in a lateral direction and having a definable bottom.

groundwater budget – A numerical accounting, the groundwater equation, of the recharge, discharge and changes in storage of an aquifer, part of an aquifer, or a system of aquifers.

groundwater in storage – The quantity of water in the zone of saturation.

groundwater management – The planned and coordinated management of a groundwater basin or portion of a groundwater basin with a goal of long-term sustainability of the resource.

groundwater management plan – A comprehensive written document developed for the purpose of groundwater management and adopted by an agency having appropriate legal or statutory authority.

groundwater mining – The process, deliberate or inadvertent, of extracting groundwater from a source at a rate in excess of the replenishment rate such that the groundwater level declines persistently, threatening exhaustion of the supply or at least a decline of pumping levels to uneconomic depths.

groundwater monitoring network – A series of monitoring wells at appropriate locations and depths to effectively cover the area of interest. Scale and density of monitoring wells is dependent on the size and complexity of the area of interest, and the objective of monitoring.

groundwater overdraft – The condition of a groundwater basin in which the amount of water withdrawn by pumping exceeds the amount of water that recharges the basin over a period of years during which water supply conditions approximate average conditions.

groundwater overdraft – A long-term reduction in groundwater levels; outflow minus inflow. *Context: Evaluation Criteria.*

groundwater quality – See water quality

groundwater recharge facility – A structure that serves to conduct surface water into the ground for the purpose of replenishing groundwater. The facility may consist of dug or constructed spreading basins, pits, ditches, furrows, streambed modifications, or injection wells.

groundwater recharge – The natural or intentional infiltration of surface water into the zone of saturation.

groundwater remediation/aquifer remediation – *Groundwater Remediation* involves extracting contaminated groundwater from an aquifer, treating it, and then either putting it back in the aquifer or using it for agricultural or municipal purposes. *Aquifer Remediation* is usually accomplished by treating groundwater while it is still in the aquifer, using in-situ methods involving biological, physical, or chemical treatment or electrokinetics. *Context: Study Plan Building Block, Resource Management Strategy.*

groundwater source area – An area where groundwater may be found in economically retrievable quantities outside of normally defined groundwater basins, generally referring to areas of fractured bedrock in foothill and mountainous terrain where groundwater development is based on successful well penetration through interconnecting fracture systems. Well yields are generally lower in fractured bedrock than wells within groundwater basins.

groundwater storage capacity – Volume of void space that can be occupied by water in a given volume of a formation, aquifer, or groundwater basin.

groundwater subbasin – A subdivision of a groundwater basin created by dividing the basin using geologic and hydrologic conditions or institutional boundaries.

groundwater table – The upper surface of the zone of saturation in an unconfined aquifer.

groundwater quality – Water quality can affect supply integrity. Many pollutants are hydrophilic and not easily filtered by soil. Treated groundwater can be added to water supply. *Context: Evaluation Criteria.*

H

hazardous waste – Waste that poses a present or potential danger to human beings or other organisms because it is toxic, flammable, radioactive, explosive, or has some other property that produces substantial risk to life.

hydraulic barrier – A barrier created by injecting fresh water to control seawater intrusion in an aquifer, or created by water injection to control migration of contaminants in an aquifer.

hydraulic conductivity – A measure of the capacity for a rock or soil to transmit water; generally has the units of feet/day or cm/sec.

hydrograph – A graph that shows some property of groundwater or surface water as a function of time.

hydrologic cycle – The circulation of water from the ocean through the atmosphere to the land and ultimately back to the ocean.

hydrologic region – A study area consisting of multiple planning subareas. California is divided into 10 hydrologic regions.

hydrology – The annual volume and the monthly timing of runoff. *Context: Scenario Factor.*

hydrostratigraphy – A geologic framework consisting of a body of rock having considerable lateral extent and composing a reasonably distinct hydrologic system.

hyporheic zone – The region of saturated sediments beneath and beside the active channel and that contain some proportion of surface water that was part of the flow in the surface channel and went back underground and can mix with groundwater.

I

in-lieu recharge – The practice of providing surplus surface water to historic groundwater users, thereby leaving groundwater in storage for later use.

industrial activity mix – The mix of high and low water using industrial activity. Note that Industrial Activity is broken into two factors: Total Industrial Activity and Industrial Activity Mix. The latter factor allows designation of the type of industry that is occurring. This is necessary to account for the large variation in water demands by industry type. See also total industrial activity. *Context: Scenario Factor.*

infiltration – The flow of water downward from the land surface into and through the upper soil layers.

infiltration capacity – The maximum rate at which infiltration can occur under specific conditions of soil moisture.

ISI – Integrated Storage Investigations Program, an element of the CALFED Bay Delta initiative.

integrated regional water management – A comprehensive, systems approach for determining the appropriate mix of demand and supply management options that provide long-term, reliable water supply at lowest reasonable cost and with highest possible benefits to customers, economic development, environmental quality, and other social objectives.

intercropping – The simultaneous planting of two or more crops in the same field. The practice is used to help control pest populations that can occur on monoculture crops. Sometimes called "polycropping" or "plant stratification."

interregional import projects – Movement of water between regions through mechanisms such as the State and federal water projects. *Context: Scenario Factor*.

irrigation efficiency (IE) – The efficiency of water application and use, calculated by dividing a portionof applied water that is beneficially used by the total applied water, expressed as a percentage The two main beneficial uses are crop water use (evapotranspiration, ET_c) and leaching to maintain a salt balance.

irrigation water requirements – The quantity of water exclusive of precipitation that is required from various uses.

J

joint powers agreement (JPA) – An agreement entered into by two or more public agencies that allows them to jointly exercise any power common to the contracting parties. The JPA is defined in Ch. 5 (commencing with Section 6500) of Division 7 of Title 1 of the California Government Code.

L

land subsidence – The lowering of the natural land surface due to groundwater (or oil and gas) extraction.

leaching requirements – The fraction of water entering the soil that must pass through the root zone in order to prevent soil salinity from exceeding a specific value.

leaching efficiency – The ration of the average salt concentration in drainage water to an average salt concentration in the soil water of the root zone when near field capacity.

leaky confining layer – A low-permeability layer that can transmit water at sufficient rates to furnish some recharge from an adjacent aquifer to a well.

lithologic log – A record of the lithology of the soils, sediments and/or rock encountered in a borehole from the surface to the bottom.

lithology – The description of rocks, especially in hand specimen and in outcrop, on the basis of such characteristics as color, mineralogic composition, and grain size.

losing stream – A stream or reach of a stream that is losing water by seepage into the ground.

M

management objectives – Objectives that set forth the priorities and measurable criteria of water management. Examples include improve water quality, augment water supplies, improve use efficiency.

matching water quality to use – a resource management strategy that recognizes that not all water usesrequire the same quality water. High quality water sources can be used for drinking and industrial purposes that benefit from higher quality water, and lesser quality water can be desirable for some uses, such as riparian streams with plant materials benefiting fish. *Context: Resource Management Strategy.*

maximum contaminant level (MCL) – The highest drinking water contaminant concentration allowed under federal and State Safe Drinking Water Act regulations.

microirrigation – The frequent application of small quantities of water as drops, tiny streams, or miniature spray through emitters or applicators placed along a water delivery line. Microirrigation encompasses a number of methods or concepts such as bubbler, drip, trickle, mist, or spray.

multicropping – The practice of consecutively producing two crops (double cropping) or more of either like or unlike commodities on the same land within the same year. An example of double cropping might be to harvest a wheat crop by early summer and then plant corn or beans on that acreage for harvest in the fall. Suitable climates and reliable water supplies are important factors with this practice.

N

naturally occurring conservation – The amount of background conservation occurring independent of the BMP and EWMP programs (e.g., plumbing codes, etc.). *Context: Scenario Factor.*

natural recharge – Natural replenishment of an aquifer generally from snowmelt and runoff; through seepage from the surface.

new water – Water that is legally and empirically available for a beneficial use; can be developed through many strategies such as capturing surplus water, desalination of ocean water and reductions in depletions. (Same as meaning as real water) *Context: Planning Concept/Consideration.*

nonpoint source – Pollution discharged over a wide land area, not from one specific location. These are forms of diffuse pollution caused by sediment, nutrients, etc., carried to lakes and streams by surface runoff. See also point source

O

operational yield – An optimal amount of groundwater that should be withdrawn from an aquifer system or a groundwater basin each year. It is a dynamic quantity that must be determined from a set of alternative groundwater management decisions subject to goals, objectives, and constraints of the management plan.

ordinance – A law set forth by a governmental authority.

overdraft – See groundwater overdraft

overlying right – Property owners above a common aquifer possess a mutual right to the reasonable and beneficial use of a groundwater resource on land overlying the aquifer from which the water is taken. Overlying rights are correlative (related to each other) and overlying users of a common water source

must share the resource on a pro rata basis in times of shortage. A proper overlying use takes precedence over all nonoverlying uses.

operational flexibility – The degree to which a study plan affects the temporal or spatial operational efficiency of existing and proposed infrastructure to maximize benefits. *Context: Evaluation Criteria.*

other interregional import deliveries – This factor is intended to capture the interregional movement of water for "projects" such as Russian River, Trinity River Exports or Putah South Canal. Note that the project name must be specified in the study plan narrative. *Context: Scenario Factor.*

P

perched groundwater – Groundwater supported by a zone of material of low permeability located above an underlying main body of groundwater.

perennial yield – The maximum quantity of water that can be annually withdrawn from a groundwater basin over a long period of time (during which water supply conditions approximate average conditions) without developing an overdraft condition.

permeability – The capability of soil or other geologic formations to transmit water.

pesticide – Any of a class of chemicals used for killing insects, weeds, or other undesirable entities. Most commonly associated with agricultural activities, but has significant domestic use in California.

point source – A specific site from which wastewater or polluted water is discharged into a water body. See also nonpoint source

pollution (of water) – The alteration of the physical, chemical, or biological properties of water by the introduction of any substance into water that adversely affects any beneficial use of water.

pollution prevention – Preventing pollution can improve water quality for all beneficial uses by protecting water at its source, reducing the need and cost for other water management actions and treatment. *Context: Resource Management Strategy*.

population density – The average number of people per square mile for a planning area. *Context: Scenario Factor.*

population distribution – The geographic location within California of the population projection. *Context: Scenario Factor.*

population projection – The 2030 forecast of population made by the California Department of Finance or other agencies. *Context: Scenario Factor.*

porosity – The ratio of the voids or open spaces in alluvium and rocks to the total volume of the alluvium or rock mass.

possible contaminating activity (PCA) – Human activities that are actual or potential origins of contamination for a drinking water source. PCAs include sources of both microbiological and chemical contaminants that could have an adverse effect upon human health.

potentiometric surface – The surface to which the water in a confined aquifer will rise in a tightly cased well.

precipitation enhancement – The action of artificially stimulating clouds "cloud seeding" to produce more rainfall/snowfall than would naturally occur. *Context: Resource Management Strategy.*

prescriptive right – Rights obtained through the open and notorious adverse use of another's water rights. By definition, adverse use is not use of a surplus, but the use of nonsurplus water to the direct detriment of the original rights holder.

public trust – The extent and likelihood for a study plan to conflict with uses protected by the public trust doctrine, such as fishing, navigation, etc. Involves the development, management and conservation of public resources to the benefit of all generations. *Context: Evaluation Criteria.*

public water system – A system for the provision of water for human consumption through pipes or other constructed conveyances that has 15 or more service connections or regularly serves at least 25 individuals daily at least 60 days out of the year.

pueblo right – A water right possessed by a municipality which, as a successor of a Spanish or Mexican pueblo, entitled to the beneficial use of all needed, naturally occurring surface and groundwater of the original pueblo watershed Pueblo rights are paramount to all other claims.

percolation – Process in which water moves through a porous material, usually surface water migrating through soil toward a groundwater aquifer.

R

rate structure – Designates the rate basis for cost recovery (e.g., flat, uniform, tiered, etc.). Block/Tiered rates are assumed to provide cost signals to consumers. Costs can include capital, O&M, financing, environmental compliance (documentation, permitting and mitigation), etc. *Context: Scenario Factor.*

real water – See new water. *Context: Planning Concept/Consideration.*

recharge – Water added to an aquifer or the process of adding water to an aquifer. Groundwater recharge occurs either naturally as the net gain from precipitation or artificially as the result of human influence. See also artificial recharge.

recharge area protection – The action of keeping recharge areas from being paved over or otherwise developed and guarding the recharge areas so they don't become contaminated *Context: Resource Management Strategy.*

recharge basin – A surface facility constructed to infiltrate surface water into a groundwater basin.

recreation – Water-dependent recreation activities that are consumptive (e.g., parks), flat-water (e.g., boating), or flow-based (e.g., whitewater rafting). *Context: Scenario Factor.*

recreation reservoir-based – The availability of flat water recreation, such as boating and skiing, in the form of future storage facilities as well as operation of existing surfaces storage facilities. *Context: Evaluation Criteria.*

recreation sport-fish populations – The availability of fish species that support recreational fishing in terms of mortality rates and habitat sustainability associated with water management activities. *Context: Evaluation Criteria.*

recreation watercourse-based – The availability of recreational opportunities that are dependent on in-stream flows such as whitewater rafting. *Context: Evaluation Criteria.*

recycled water – The process of treating municipal, industrial, and agricultural wastewater to produce water that can be productively reused. *Context: Resource Management Strategy.*

regional self-sufficiency – The degree to which a study plan involves implementation of regional water management options. *Context: Evaluation Criteria.*

reliability planning – Water reliability management planning is done by comparing the costs of taking actions to maintain or increase reliability to the costs of accepting less reliability. On this basis, accepting of the costs of adverse effects of less than 100 percent reliability could be a legitimate planning decision. Providing full water supply to meet 100 percent of projected future water demand is not the planning goal, rather, the goal is to find the justified level of reliability. *Context: Planning Concept/Consideration.*

resource management strategy – A project, program, or policy that helps federal, State or local agencies manage water and related resources. Resource Management Strategies can reduce water demand, improve operational flexibility, increase water supply, improve water quality, or practice resource stewardship.

response packages – Different sets of resource management strategies to be tested against different future scenarios for performance comparison. This analysis will take place in Water Plan Update 2010. Comparing the performance of different response packages will provide useful information to decision-makers and water managers as they choose actions to achieve a desirable future condition.

return-flow system – A system of pipelines or ditches to collect and convey surface or subsurface runoff from an irrigated field for reuse.

root zone – The portion of the soil profile through which plant roots readily penetrate to obtain water and plant nutrients, expressed in inches or feet of depth.

reused AG water – Water that is being used by more than one grower and is, therefore, not available for reallocation should one grower become increasingly efficient (i.e. applied water reductions minus real water savings). *Context: Planning Concept/Consideration.*

riparian right – A right to use surface water, such right derived from the fact that the land in question abuts the banks of streams.

runoff – The volume of surface flow from an area.

S

safe yield – The maximum quantity of water that can be continuously withdrawn from a groundwater basin without adverse effect.

saline soil – A nonalkali soil containing soluble salts in such quantities that they interfere with the growth of most plants.

saline intrusion – The movement of salt water into a body of fresh water. It can occur in either surface water or groundwater bodies.

salinity – Generally, the concentration of mineral salts dissolved in water. Salinity may be expressed in terms of a concentration or as electrical conductivity. When describing salinity influenced by seawater, salinity often refers to the concentration of chlorides in the water.

saturated zone – The zone in which all interconnected openings are filled with water, usually underlying the unsaturated zone.

scenarios – Sets of plausible future conditions based on different assumptions of factors such as population size, density, and distribution, per capita income, commercial and industrial activity, and crop area and water use. In *Water Plan Update 2005*, the three scenarios for 2030 are strictly narrative and are “no action” (i.e., they do not reflect any additional resource management strategies beyond those currently planned, such as new water efficiency programs).

seasonal vs. permanent crop mix – Shifts in crop type between seasonal and permanent. This factor depicts the diminished ability to reduce water use during times of increased water scarcity (due to shifting from seasonal to permanent crops). In other words, shortage losses increase when shifting from season to permanent.

seawater intrusion barrier – A system designed to retard, cease or repel the advancement of seawater intrusion into potable groundwater supplies along coastal portions of California. The system may be a series of specifically placed injection wells where water is injected to form a hydraulic barrier.

secondary porosity – Voids in a rock formed after the rock has been deposited; not formed with the genesis of the rock, but later due to other processes. Fractures in granite and caverns in limestone are examples of secondary openings.

seepage – The gradual movement of water into, through, or from a porous medium. Also the loss of water by infiltration into the soil from a canal, ditches, laterals, watercourse, reservoir, storage facilities, or other body of water, or from a field.

semi-confined aquifer – A semi-confined aquifer or leaky confined aquifer is an aquifer that has aquitards either above or below that allow water to leak into or out of the aquifer depending on the direction of the hydraulic gradient.

service area – The geographic area served by a water agency.

soil moisture – The water in soils. Usually expressed as a percentage of the dry weight of the soil. Can also be expressed on a wet weight or a volume basis.

soil texture – Soil texture refers to the percentage of sand, silt, and clay particles in a soil. Sand, silt, and clay particles are defined by their size. Soil texture has important effects on soil properties. Water-holding capacity, drainage class, consistence, and chemical properties are just a few examples of properties that are affected by soil texture.

specific retention – The ratio of the volume of water a rock or sediment will retain against the pull of gravity to the total volume of the rock or sediment.

specific yield – the ratio of the volume of water a rock or soil will yield by gravity drainage to the total volume of the rock or soil.

spring – a location where groundwater flows naturally to the land surface or a surface water body.

sprinkler irrigation – Method of irrigation in which the water is sprayed, or sprinkled, through the air to the ground surface.

stakeholder –individuals or groups who can affect or be affected by an organization's activities. *or:* Individuals or groups with an interest or "stake" in what happens as a result of any decision or action. Stakeholders do not necessarily use the products or receive the services of a program.

State Water Project deliveries – The volume of water imported to a given study area from the State Water Project. *Context: Scenario Factor.*

statewide water management systems – These include physical facilities (more than 1,200 State, federal, and local reservoirs, as well as canals, treatment plants, and levees), which make up the backbone of water management in California, and statewide water management programs, which include water-quality standards, monitoring programs, economic incentives, water pricing policies, and extensive statewide water-efficiency programs such as appliance standards, labeling, and education.

strategic plan – The long-term goals of an organization or program and an outline of how they will be achieved (e.g., adopting specific strategies, approaches, and methodologies).

stratigraphy – The science of rocks. It is concerned with the original succession and age relations of rock strata and their form, distribution, lithologic composition, fossil content, geophysical and geochemical properties—all characters and attributes of rocks as strata—and their interpretation in terms of environment and mode of origin and geologic history.

stress irrigation – Management of irrigation water to apply less than enough water to satisfy the soil water deficiency in the entire root zone. (Preferred term is limited irrigation.)

subirrigation – Application of irrigation water below the ground surface by raising the water table to within or near the root zone.

subsurface drip irrigation – Application of water below the soil surface through emitters, with discharge rates generally in the same range as drip irrigation. This method of water application is different from and not to be confused with subirrigation where the root zone is irrigated by water table control.

surface irrigation – Irrigation in which the soil surface is used as the conduit, as in furrow and border irrigation, and as opposed to sprinkler, drip, and subirrigation.

surface storage facilities – The volume and yield of usable reservoir storage in a given area. *Context: Resource Management Strategy***.**

surge irrigation – A surface irrigation technique wherein flow is applied to furrows (or less commonly, borders) intermittently during a single irrigation set.

subsidence – See land subsidence

subterranean stream – Subterranean streams "flowing through known and definite channels" are regulated by California's surface water rights system.

surface supply – Water supply obtained from streams, lakes, and reservoirs.

surplus water – Water that is not being used directly or indirectly to benefit the environmental, agricultural or urban use sectors. *Context: Planning Concept/Consideration.*

sustainability – Management and policy actions, targeting a specified resource, that avoids complete depletion over a specified time horizon. *Context: Natural resource.* Management and policy actions that ensure the continued feasibility of a specified economic activity over a specified time horizon. *Context: Economic Activity.*

system reoperation – Changing existing water system operation and management procedures or priorities to either meet competing beneficial uses or derive more total benefits from the water system by operating more efficiently. *Context: Resource Management Strategy.*

T

terrorism/vandalism – The magnitude and probability of consequences that would occur as a result of terrorist-induced infrastructure damage under a given study plan. *Context: Evaluation Criteria.*

third party impacts – The occurrence of incidental economic impacts to parties not directly related to (impact-causing) water management actions. For example, agricultural land retirement can impact local tax revenues and/or labor conditions. *Context: Evaluation Criteria.*

total capital cost – Total monetary cost of option required for "turn key" implementation including environmental and third party impact mitigation, storage, conveyance, energy, capitalized O&M, administrative, planning, legal and engineering costs. *Context: Planning Concept/Consideration.*

total commercial activity – The amount of commercial activity (e.g., employment, productivity, commercial land use, etc) that occurs in a given study area. This factor is a driver of (and indicator for) commercial water use and includes institutional water use (government offices, schools, etc.) as well. See also commercial activity mix. *Context: Scenario Factor.*

total industrial activity – The total amount of industrial activity (e.g., employment, productivity, industrial land use, etc) that occurs in a given study area. This factor is a driver of (and indicator for) industrial water use. *Context: Scenario Factor.*

total irrigated crop area – The total area of irrigated crops (by type) planted in a planning area during a given year. This number includes multiple cropping. *Context: Scenario Factor.*

total population – The statewide total population projection regardless of geographical distribution. *Context: Scenario Factor.*

toxic spills – The magnitude and probability of water supply and/or water quality consequences that would occur as a result of toxic spills under a given study plan. *Context: Evaluation Criteria.*

transoceanic water bags – The process of diverting water in areas that have unallocated fresh water supplies, storing the water in large inflatable bladders, and towing to an alternate coastal region. *Context: Resource Management Strategy.*

transpiration – An essential physiological process in which plant tissues give off water vapor to the atmosphere.

tribal resources – Impact on resources utilized by the tribal nations fish and wildlife, water quality, water availability, etc. *Context: Evaluation Criteria.*

U

unconfined aquifer – An aquifer which is not bounded on top by an aquitard. The upper surface of an unconfined aquifer is the water table.

underground stream – Body of water flowing as a definite current in a distinct channel below the surface of the ground, usually in an area characterized by joints or fissures. Application of the term to ordinary aquifers is incorrect.

unit applied water – The quantity of water applied to a specific crop per unit area (sometimes expressed in inches of depth).

unsaturated zone – The zone below the land surface in which pore space contains both water and air.

urban land use management – Planning for the housing and economic development needs of the growing population while providing for the efficient use of water and other resources.

urban runoff management – A broad series of activities to manage both storm water and dry weather runoff.

Urban Water Management Planning Act – Sections 10610 through 10657 of the California Water Code. The Act requires urban water suppliers to prepare urban water management plans which describe and evaluate sources of water supplies, efficient uses of water, demand management measures, implementation strategies and schedules, and other relevant information and programs within their water service areas. Urban water suppliers (CWC Section 10617) are either publicly or privately owned and provide water for municipal purposes, either directly or indirectly, to more than 3,000 customers or supply more than 3,000 acre-feet of water annually

[urban] water reliability (average) – A measure of a system's ability to sustain the social, environmental and economic systems that it serves during a year of average participation. *Context: Evaluation Criteria*.

[urban] water reliability (dry) – A measure of a system's ability to sustain the social, environmental and economic systems that it serves during a dry year. *Context: Evaluation Criteria.*

[urban] water reliability (wet) – A measure of a system's ability to sustain the social, environmental and economic systems that it serves during a wet year. *Context: Evaluation Criteria.*

urban water use efficiency – Methods or technologies resulting in the same beneficial residential, commercial, industrial, and institutional uses with less water or increased beneficial uses from existing water quantities. *Context: Scenario Factor, Resource Management Strategy.*

usable storage capacity – The quantity of groundwater of acceptable quality that can be economically withdrawn from storage.

V

vadose zone – See unsaturated zone

volatile organic compound (VOC) – A manmade organic compound that readily vaporizes in the atmosphere. These compounds are often highly mobile in the groundwater system and are generally associated with industrial activities.

W

water balance – An analysis of the total developed/dedicated supplies, uses, and operational characteristics for a region.

water portfolio – A complete picture of the water supply and use for a given year statewide or by region, subject to availability of data; includes the flow diagram, flow diagram table, water balances, and summary table.

water quality – Description of the chemical, physical, and biological characteristics of water, usually in regard to its suitability for a particular purpose or use. The degree to which a study plan is expected to affect water quality in terms of ecosystem health, recreation, salinity intrusion, usability per sector, treatment costs, etc. *Context: Evaluation Criteria.*

water reliability (dry) – A measure of a system's ability to sustain the social, environmental, and economic systems that it serves during a dry year.

water reliability (wet) – A measure of a system's ability to sustain the social, environmental, and economic systems which it serves during a wet year.

water supply imports – The amount of water that needs to be brought in from other regions to meet needs. *Context: Evaluation Criteria.*

water table – See groundwater table

water transfers – Water supplies that are transferred or exchanged from one entity to another resulting in a change in the place and/or type of use. Does not include long-term contractual imports from other regions. *Context: Scenario Factor, Resource Management Strategy.*

water year – A continuous 12-month period for which hydrologic records are compiled and summarized. Different agencies may use different calendar periods for their water years.

watershed – The land area from which water drains into a stream, river, or reservoir.

watershed management – The process of evaluating, planning, managing, restoring, and organizing land and other resource use within an area that has a single common drainage point. *Context: Resource Management strategy.*

wildfire – The magnitude and probability of consequences that would occur as a result of wild-fire induced infrastructure damage under a given study plan. *Context: Evaluation Criteria.*

WQCP – Water Quality Control Plan for the San Francisco Bay/Sacramento San Joaquin Delta Estuary.